

Amendments to the Specification

Please replace the paragraph beginning on page 1, line 4 with the following rewritten paragraph.

-- This is a Continuation in part of United States patent application Serial No. 08/949,842, attorney docket number P-764, filed October 14, 1997, which is a Continuation in Part of United States patent application Serial No. 08/871,243 filed June 9, 1997, attorney docket number P-755, now abandoned. This application also claims priority of U.S. provisional patent applications Serial No. 60/089,836 filed June 19, 1998 and Serial No. 60/089,863 filed June 19, 1999 1998. --

Please replace the paragraph beginning on page 7, line 22 with the following rewritten paragraph.

-- Figure 16 is a cross-sectional view of the passive restraint system of Figure 12 taken along line 16-16 of Figure 14; and --

Please replace the paragraph beginning on page 7, line 24 with the following rewritten paragraph.

-- Figure 17 is a partial cross-sectional view of the passive restraint system of Figures 9-11 including an alternative tether attachment construction[[.]][[.]]--

Please replace the paragraph beginning on page 8, line 16 with the following rewritten paragraph.

Appln. No. 09/786,305
Amndt. dated June 4, 2004
Reply to Office Action of March 10, 2004

-- Figure 27 is a perspective view of the air bag canister assembly of Figure 26 an automobile door panel including an air bag door integrally formed in a panel retainer according to the invention and defined by a 360° tear seam; --

Please replace the paragraph beginning on page 8, line 18 with the following rewritten paragraph.

-- Figure 28 is a magnified view of the regions in Figure 2- 26 bounded by Circle A; --

Please replace the paragraph beginning on page 9, line 1 and ending at page 9, line 10 with the following rewritten paragraphs.

-- Figure 34 is a front perspective view of the reaction plate of Figure 33; and --

-- Figure 35 is a die view of the tear seam pattern of the integral air bag door of Fig. 25[[;]][[.]]--

~~Figure 36 is a fragmentary cross-sectional edge view of an alternative reaction plate edge treatment;~~

~~Figure 37 is a fragmentary cross-sectional edge view of another alternative reaction plate edge treatment; and~~

~~Figure 38 is a fragmentary cross-sectional view of yet another alternative reaction plate edge treatment.~~

Please replace the paragraph beginning on page 24, line 18 with the following rewritten paragraph.

-- The reaction plate 411 is disposed between the air bag and the air bag deployment door 416 and is configured to receive the force of air bag deployment from the air bag dispenser 422 and to direct and distribute that force against the door inner surface 424 to at least partially separate the door 416 from the vehicle panel 414 along the frangible marginal edge 420 of the door 416. The reaction plate 411 has an integral tether 430 connected between the support structure 412 and an outwardly pivotable panel portion 435 of the reaction plate 411. The tether 430 is configured to bend under the force of air bag inflation allowing the pivotable panel 435 to pivot into a position angularly spaced from the air bag deployment path. The pivotable panel portion 435 of the reaction plate 411 is configured to close a canister opening 434 of the air bag canister ~~422~~ 428. The reaction plate 411 comprises a plastic material. --

Please replace the paragraph beginning on page 25, line 22 with the following rewritten paragraph.

-- The pivotable panel portion 435 of the reaction plate 411 includes integral ribs shown at 448 in Figures 31 and 32. The integral ribs 448 are configured to stiffen the reaction plate 411 against deformation caused by uneven impact forces from a deploying air bag. The integral ribs 448 extend integrally inward from an inner surface 446 of the pivotable panel portion 435 of the reaction plate 411. As is best shown in Figure 32, the integral ribs 448 include vertical and horizontal intersecting ribs in a rectangular matrix or egg crate pattern.--

Please replace the paragraph beginning on page 27, line 11 with the following rewritten paragraph.

-- The hinge panel 224 is invisible as viewed from an outer class-A surface 226 of the instrument 214. As is best shown in Figure 18, a first end 228 of the hinge panel 224 is embedded in a portion of the first material 216 that forms the door 212. A second end 230 of the hinge panel 224 is embedded in a portion of the first material 216 that forms the instrument panel 214. A mid portion 232 of the hinge panel 224 is disposed between the first and second ends ~~28, 30~~ 228, 230. As is best shown in Figure 18, the mid portion 232 of the hinge panel 224 has a hinge panel outer surface 234 covered with a portion 236 of the first material 216 that forms the outer class-A surface of the door 212 and instrument panel 214. The portion 236 of the first material that covers the outer surface 234 of the mid portion 232 of the hinge panel 224 continues the outer class-A surface 226 over the hinge panel 224 and between the door 212 and instrument panel 214, concealing the presence of the hinge panel 214 and the dividing line or seam 220 between the door 212 and instrument panel 214. The mid portion 232 also has an exposed hinge panel inner surface shown at 238 in Figures 18 and 22. The exposed hinge panel inner surface 238 is disposed opposite the hinge panel outer surface 234. The hinge panel inner surface 238 is left exposed to promote bending along the hinge 222.--

Please replace the paragraph beginning on page 28, line 22 with the following rewritten paragraph.

-- The panel and integral airbag door assembly 210' of Figures 20 and 23 include two tubular channels generally indicated at 240' and 248, respectively. The tubular channels 240', ~~248"~~ 248 are disposed adjacent and parallel to each other. The channels 240', ~~248"~~ 248 run astride and define an elongated gap 218' that defines an integral air bag door 212' in an

instrument panel retainer 214'. The gap 218' also serves as a frangible marginal edge between the two structural channels 240', 248" 248--

Please replace the paragraph beginning on page 29, line 19 with the following rewritten paragraph.

-- The tear seam 218 of the inflatable restraint assembly may be constructed according to the present invention by first providing a mold configured to form the shape of the integral air bag door 212 and instrument panel 214 and the tubular channel 240 or channels 240', 248"
248; 240", 248". Resin is then injected into the mold. Gas is then injected into a portion of the resin disposed in a portion of the mold configured to form the tubular channel 240 or channels 240', 248" 248; 240", 248". As the gas is injected it forms the tubular channel tube(s) 242 and helps propel resin into narrow mold regions along the tear seam 218. The resin is then allowed to cure within the mold before it is removed. The use of tubular channels to form tear seams has the advantage of providing relatively large tear-guide structures without using large amounts of material to create thick regions that would result in sink formation. If large amounts of material were used to thicken the panel on either side of the desired tear seam, shrinkage during curing would result in surface discontinuities in the form of depressions or "sinks"--

Please replace the paragraph beginning on page 30, line 1 with the following rewritten paragraph.

-- Another inflatable restraint assembly embodiment, generally shown at 310 in Figures 25 and 26, includes a 360° tear seam 316 bounded by tubular channels 350. Figures

25, 26 and 28 show the assembly 310 installed in an automotive instrument panel and Figure 27 shows an alternative embodiment 310' shown installed in an automotive door panel. Figure 29 shows an alternative screw boss embodiment. Yet another inflatable restraint assembly embodiment, generally shown at 310" in Figure 30, includes a 270° tear seam 316" bounded by tubular channels 350", 360". Reference numerals annotated with a prime symbol (') in Figure 27 and with a double-prime symbol ("") in Figure 30 indicate alternative configurations of elements that also appear in the embodiment of Figures 25, 26 and 28. Where a portion of the description uses a reference numeral to refer to the figures, we intend that portion of the description to apply equally to elements designated by primed numerals in Figure 27 and double-primed numerals in Figure 30. --

Please replace the paragraph beginning on page 30, line 15 with the following rewritten paragraph.

-- The assembly 310 comprises an air bag door generally indicated at 312 in Figure 26. The air bag door 312 is integrally formed in a hard-plastic trim panel retainer portion generally indicated at 314 in Figure 26. The air bag door 312 and trim panel retainer 314 are formed together as a single unitary piece by injection molding. The weakened area or tear seam in the retainer, shown at 316 in Figures 25 and 26, defines at least a portion of the outline of the air bag door 312. The tear seam 316 is configured to help guide tearing and/or breakage under the force of air bag inflation. The tear seam 316 is formed in an inner surface of the retainer portion 314 to provide an air bag door 312 that is hidden from the view of vehicle occupants. In other embodiments, the tear seam 316 or a styling line may be included on an outer surface of the retainer portion 314.--

Please replace the paragraph beginning on page 30, line 26 and ending on page 31, line 7 with the following rewritten paragraph.

-- An air bag canister, generally indicated at 318 in Figures 25 and 26, is supported behind the air bag door 312 and has a canister opening 320 directed toward and facing the air bag door 312. In a preferred embodiment, the canister 318 is an aluminum extrusion. A cover 319 with a center break 321 covers the canister opening 320. The cover 319 protects an air bag 322 stored in the canister 318. The configuration enables the air bag 322 to deploy through the door 312 from within the canister 318 when inflated in a known manner. The air bag door 312 is shaped to approximate the shape of the air bag canister opening 320 to preclude interference between the deploying air bag 322 and inner edges of the openings created in the retainer 314 when the air bag door 312 is forced open. The air bag 322 will at least initially retain the general shape of the canister opening 320 that the air bag 322 is deploying from. Therefore, the air bag 322 is less likely to get caught on the inner edges of the air bag door opening 320--because the opening 320 has the same shape as the canister opening 320.--

Please replace the paragraph beginning on page 33, line 13 with the following rewritten paragraph.

-- Alternatively, the reaction plate may include a perimeter edge treatment configured to further concentrate deployment forces along the tear seam.—~~Three examples of such alternative edge treatments are shown 370, 372 and 374 in Figures 36, 37 and 38, respectively. Any one of these or other such treatments may be employed in any of the embodiments disclosed herein.~~ As shown in FIG. 36, the edge treatment 370 may include a

~~folding of an outer edge of the reaction plate to form a perimeter ridge of triangular cross-section. As shown in FIG. 37, the edge treatment 372 may include a folding of an outer edge of the reaction plate to form a perimeter ridge of rectangular or square cross section. As shown in FIG. 38, the edge treatment 374 may include a simple right angular folding of an outer edge of the reaction plate. In each case, the reaction plate would be positioned with the edge treatment 370, 372, 374 facing outward and disposed along and adjacent a tear seam 316.~~ --

Please replace the paragraph beginning on page 33, line 30 ending on page 34, line 4 with the following rewritten paragraph.

-- A pair of elongated tubular channels, shown at 350 in Figure 26, are formed by gas-assisted injection molding along either side of the tear seam 316 to further insure that tearing occurs only along the tear seam 316. The tubular channels 350 increase structural rigidity adjacent the tear seam 316 without requiring a large mass of material. Because the tubular channels 350 are hollow and do not require a relatively large concentration of material, their formation by injection molding does not result in distortions of the outer class-A surface 341 326 as would otherwise be the case. --

Please replace the paragraph beginning on page 34, line 11 with the following rewritten paragraph.

-- The door 312 includes ribs 332 and bosses 334 integrally extending from a back surface 336 of the door 312 opposite the outer class-A surface 326. However, alternatively, the reaction plate 324 may include ribs extending integrally from an outer surface 313 of the

reaction plate 324. (The Figure 26 drawing is consistent with the ribs 332 extending either outward from the reaction plate 324 outer surface 313 or inward from the door 312 inner surface 336.) The reaction plate 324 is spaced from the back surface 336 by the ribs 32 332, bosses 34 334, and is fastened to the door 312 by fasteners 338 extending through the reaction plate 324 and into the bosses 334. Referring to Figure 29 and the embodiment of Figure 30, other embodiments may include [[a]] tubular channels 360 integrally extending from the back surface 336 of the door 312 and/or the retainer 314 and supporting the bosses 334 which integrally extend inward from the tubular channels 360. A tether strap 330 and reaction plate 324 are attached to the bosses 334 by fasteners 338. One of the tubular channels 360 integrally extends 360° around the peripheral edge of the door 312 to help guide tearing completely around the entire door 312 and thus allowing the door 312 to completely separate from the trim panel retainer 314. However, in other embodiments, the tubular channel 360 that is formed integrally with the door 312 may be formed only 270° with respect to the canister 318, i.e., at the sides and bottom of the canister opening. This is to concentrate the tearing forces at the side 316a, 316b and bottom 316c of the tear seam 316 and allow the door 312 to pivot around a living hinge formed at a junction of the retainer 314 and door 312 upon air bag inflation.--

Please replace the paragraph beginning on page 35, line 13 with the following rewritten paragraph.

-- In the embodiment of Figures 25 and 26 the trim panel that includes the retainer 314 and door 312, is an instrument panel. However, in other embodiments, the inflatable restraint assembly may be configured to be mounted in a door panel as shown at 310' in Figure 28-27,

rather than an instrument panel as shown at 310 in Figure 25. In the door panel, the assembly ~~102~~ 310' acts as a side-impact-absorbing system.--

Please replace the paragraph beginning on page 36, line 7 with the following rewritten paragraph.

--A screw boss 334" integrally extends inward from tubular channel 360" and provides one of two connecting points for the reaction plate tether ~~portion~~-330" shown in Figure 30. The second connecting point for the tether 330" is shown at screw boss 335 which integrally extends inward from the retainer 314". Screw bosses 334" and 335 also provide connecting points for an upper support bracket shown at 364 in Figure 30. The embodiment of Figure 30 also includes an additional tubular channel 364 that integrally extends from the inner surface 336" of the door 312". A third screw boss 337 integrally extends inward from tubular channel 364 and provides a connecting point for the reaction plate 324".--

Finally, Applicants note that the Examiner objected to the organization of the description. This is believed remedied by simply moving the paragraphs beginning on page 23, line 25 and ending on page 26, line 17, including the correction made herein, and inserting these paragraphs starting at page 36, line 17. Accordingly, this should overcome the objection to the organization of the description, as noted by the Examiner.

As to item 8 in the Specification portion of the Office Action dated March 10, 2004, the claim (17) rather than the specification has been amended.